What is claimed is:

1. A fuel injector having a housing including an inlet, an outlet, and a passageway for fuel flow from the inlet to the outlet, the fuel injector comprising:

a coil assembly disposed proximate the inlet of the fuel injector;

a seat disposed proximate the outlet of the fuel injector; and

a closure member disposed in the housing and operable by the coil assembly to permit and prohibit fuel flow through the seat, the closure member including:

a sleeve extending along a longitudinal axis and having first and second ends, the sleeve including an outer surface a first distance from the longitudinal axis; and

an armature coupled to the first end of the sleeve so that the sleeve is movable with the armature, the armature having an outer perimeter a second distance from the longitudinal axis, the second distance not greater than the first distance.

2. The fuel injector according to claim 1, wherein the coil assembly comprises an inner surface, an outer surface of the armature and the inner surface of the coil assembly defining a working gap less than 100 microns.

3. The fuel injector according to claim 1, further comprising a sealing member coupled to the second end of the sleeve.

4. The fuel injector according to claim 1, wherein the sealing member comprises a spherical shaped member to engage the seat.

5. The fuel injector according to claim 4, wherein the spherical shaped member comprises at least one of a ball and a needle.

6. The fuel injector according to claim 1, wherein at least one of the outer surface of the sleeve and the outer perimeter of the armature is circular.

7. The fuel injector according to claim 1, wherein the armature is disposed entirely within a volume defined by the outer surface of the sleeve extending along the longitudinal axis.

8. The fuel injector according to claim 1, wherein the armature includes a stop portion, the stop portion defining the outer perimeter and contacting at least a portion of the first end of the sleeve.

9. The fuel injector according to claim 1, wherein each of the sleeve and the armature includes at least one flow hole therethrough, the flow holes defining a fuel passage from the inlet to the outlet of the fuel injector.

10. The fuel injector according to claim 9, wherein the at least one flow hole in the armature comprises an oval shape.

11. The fuel injector according to claim 10, wherein the at least one flow hole in the sleeve is disposed on the second end of the sleeve.

12. The fuel injector according to claim 10, wherein the at least one flow hole in the sleeve is disposed on a transition portion between the first and second ends.

13. The fuel injector according to claim 3, wherein at least one of the armature and the sealing member are coupled to the sleeve by a tack weld.

14. The fuel injector according to claim 3, wherein at least one of the armature and the sealing member are coupled to the sleeve by a seam weld.

15. The fuel injector according to claim 1, wherein the sleeve comprises at least one of a stamped member and thin-walled drawn member.

16. A method of defining a working gap of less than 100 microns in a fuel injector including an electromagnetic actuator having an inner surface, and a closure member having a longitudinal axis and operable by the electromagnetic actuator, comprising:

providing the closure member with a sleeve and an armature coupled to the sleeve such that the sleeve provides a working surface for defining the working gap between an outer surface of the armature and the inner surface of the electromagnetic actuator, and the sleeve is movable with the armature; and

establishing the working gap to be less than 100 microns.

17. The method according to claim 16, wherein the armature is disposed entirely within a volume defined by the working surface of the sleeve extending along the longitudinal axis.

18. A closure assembly for a fuel injector including a housing, comprising:

an electromagnetic actuator disposed in the housing and having an inner surface;

a closure member disposed in the housing and operable by the actuator to permit and prohibit fuel flow through the fuel injector, the closure member including;

a sleeve extending along a longitudinal axis, the sleeve having an end and an outer surface; and

an armature coupled to the end of the sleeve and disposed entirely within a volume of the outer surface of the sleeve extending along the longitudinal axis.

19. A fuel injector having a housing including an inlet, an outlet, and a passageway for fuel flow from the inlet to the outlet along a longitudinal axis, the fuel injector comprising:

a coil assembly disposed proximate the inlet of the fuel injector, the coil assembly having an inner surface surrounding the passageway about the longitudinal axis;

a seat disposed proximate the outlet of the fuel injector; and

a closure member disposed in the housing and operable by the coil assembly to permit and prohibit fuel flow through the seat, the closure member including:

a non-magnetic sleeve having first and second sleeve ends extending along the axis, the non-magnetic sleeve having a fluid passage between the first and second sleeve ends;

a magnetic armature having first and second armature ends, the first armature end including an outer surface spaced apart from the inner surface of the coil assembly to provide a working gap between the outer surface and the inner surface, the second armature end coupled to the first sleeve end so that the sleeve is movable with the armature; and

a sealing member coupled to the second sleeve end.

20. The fuel injector of claim 19, wherein the non-magnetic sleeve comprises an intermediate portion connecting the first and second sleeve ends, the intermediate portion having apertures in communication with the fluid passage of the non-magnetic sleeve to permit fluid communication between the inlet and the sealing member.

21. A method of manufacturing a closure member for a fuel injector, the closure member including an armature and a sleeve, the fuel injector including a coil assembly having a surface disposed about a longitudinal axis of the fuel injector, the coil assembly surface defining a passageway, the closure member being operable by the coil assembly, the method comprising:

forming the sleeve, the sleeve including an outer surface disposed about a longitudinal axis of the sleeve, the outer surface being a first distance from the sleeve longitudinal axis;

forming the armature, the armature including an outer surface disposed about a longitudinal axis of the armature, the outer surface of the armature being a second distance from the armature longitudinal axis, the second distance being shorter than the first distance; and

coupling the armature to the sleeve so that the sleeve longitudinal axis is substantially colinear with the armature longitudinal axis.

22. The method of claim 21,

wherein the forming the sleeve comprises forming a recess in a first end of the sleeve, and

wherein the coupling the armature to the sleeve comprises press-fitting a first end of the armature into the recess of the sleeve.

23. The method of claim 22, further comprising calibrating the outer surface of the sleeve to set a working gap between the outer surface of the armature and the coil surface.

24. The method of claim 22, wherein the coupling the armature to the sleeve comprises at least one of spot welding, light swaging, radial laser welding, bonding, and spin-welding.

25. The method of claim 22, wherein the forming the sleeve comprises forming the sleeve of a non-magnetic material.

26. The method of claim 25, wherein the forming the sleeve comprises forming the sleeve of a non-magnetic metal material.

27. The method of claim 22, wherein the forming the armature comprises powder metal forming.

28. The method of claim 22, wherein forming the sleeve comprises one of stamping and drawing.

29. The method of claim 28, wherein the forming the sleeve comprises:

forming a portion of the sleeve disposed at a second end of the sleeve to include an outer surface being a third distance from the sleeve longitudinal axis, the third distance being shorter than the first distance; and

forming at least one aperture in the portion disposed at the second end of the sleeve.

30. A method of setting a working gap in a fuel injector, comprising:

manufacturing a closure member according to claim 21; and

disposing a portion of the closure member within the coil assembly passageway, the respective axis' of the fuel injector, the sleeve, and the armature being substantially colinear, the working gap being defined by the outer surface of the armature and the coil assembly surface.